

Nitrate and Public Water Systems

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Safe Drinking Water

- Safe drinking water for all Californians is a priority for CDPH.
- 98% of the population served by community drinking water systems in California is provided drinking water meeting health-based standards.
- CDPH data shows 127 public water systems STATEWIDE with current violations of the nitrate drinking water standard. These systems serve approximately 18,304 people, a significant number, but a comparatively small percentage of the total population served by public water systems.

SBX2 1 Nitrate Report

- CDPH participated in many aspects of this project working with UCD Researchers and SWRCB staff. This included the following:
 - Providing water quality monitoring data and assisting in the interpretation of that data;
 - Identifying water systems with existing nitrate treatment, and sending a letter to those systems requesting that they assist UCD in the study;
 - Providing background information to UCD researchers, and guidance in the preparation of the report;
 - Working with engineering staff on questions related to nitrate treatment;
 - Reviewing draft chapters of the report; and
 - Participating on the Nitrate Project Interagency Task Force.
- The UC Davis report focused on all water sources, including private domestic wells, and employed a broader definition of “risk” than compliance with the drinking water standard for nitrate.
- The information in the UC Davis report contains valuable information that will assist CDPH, its partner agencies and the Administration to determine the appropriate course of action.

Public Water Systems

- A “Public Water System” is a system for the provision of piped water to the public (does not refer to ownership of the system)
- Public Water Systems are regulated by CDPH and 32 counties
 - Community Water Systems serve residential communities with 15 or more service connections
 - CDPH regulates nearly 2,000 Community Water Systems
 - Counties regulate over 1,000 Community Water Systems
 - Noncommunity Water Systems serve 25 or more people, 60 or more days per year
 - Nontransient = serves the same population daily (schools, places of business)
 - Transient = serves a changing population (campgrounds, restaurants)
 - CDPH and counties regulate approximately 4,700 noncommunity systems
- “State Small Systems” are communities with 5 to 14 service connections; counties regulate these systems
- CDPH and the counties take enforcement actions against Public Water Systems that fail to provide safe water
- Public water systems, because they are regulated by the state, (unlike private wells), are required to analyze for nitrates and report the results to CDPH.

Public Health Concerns of Nitrate in Drinking Water

- Nitrite can interfere with the ability of red blood cells to carry oxygen to the tissues of the body, a condition called
 - Methemoglobinemia
- Of greatest concern in infants less than 6 months old, whose immature stomach environment enables conversion of nitrate to nitrite, which is then absorbed into the blood stream
 - “Blue baby syndrome”
- Considered an acute contaminant; health deteriorates rapidly over a period of days; can lead to death
- High nitrate levels may also effect the oxygen-carrying ability of the blood of pregnant women
- In general, the groups with the lowest risk of becoming ill are healthy children and adults.

Maximum Contaminant Level for Nitrate in Public Water Systems

- The US EPA established a “Maximum Contaminant Level Goal” (MCLG) for nitrate based on health effects; California’s Public Health Goal (PHG) was set at the same level
 - 45 mg/L as Nitrate [NO₃] (*10 mg/L as Nitrogen [N]*);
- The regulatory Maximum Contaminant Level (MCL) for nitrate was established by US EPA and CDPH at the same level as the MCLG/PHG
 - 45 mg/L as NO₃ (*10 mg/L as N*);
- Because nitrate tends to increase in concentration in groundwater over time, CDPH has established a “trigger” of ½ the MCL; systems detecting nitrate above this level are required to monitor more frequently to determine if the levels are increasing

Where Has Nitrate Been Found in Public Water Systems?

- Nitrate in drinking water is widespread in numerous areas of the country
- Remember, as we discuss detections of nitrate, this refers to detections from a well (“raw water”)
- This does not refer to the water delivered to customers, which may have undergone treatment or blending to reduce concentrations
- Nitrate as NO_3 detected at least once > MCL in 731 sources. Counties with greatest number of detections:
 - Los Angeles (123 sources)
 - San Bernardino (82)
 - Riverside (67)
 - Kern (41)
 - Monterey (30)
- CDPH data shows 127 public water systems STATEWIDE with current violations of the nitrate MCL.

Treatment Options

- Consolidation*
- Bottled water*
- Blending
 - With sources < MCL
 - Treating some portion of the flow and blending with untreated water
- Ion Exchange
- Reverse Osmosis
- Biological denitrification?
- Boiling water is not a solution for nitrate in water. Boiling could concentrate the nitrate level.

CDPH Sources of Funding for Public Water Systems

- Drinking Water State Revolving Fund (DWSRF) program for water system improvements
 - Low interest loans and grants to Public Water Systems
 - Priority is given to small systems, disadvantaged communities, and consolidation projects
- Proposition 84
 - Small community infrastructure improvements for chemical and nitrate contaminants (\$180 M)
 - Projects that prevent or reduce contamination of groundwater that serves as a source of drinking water (\$60 M)
- CDPH funding (provided or in process) for nitrate projects is approximately \$30 million to date.
- CDPH estimates the funding needed to address nitrate contamination in public water systems exceeds \$100 million, based on funding requests submitted to CDPH.
- CDPH has no funds for Operations and Maintenance costs

What is CDPH currently doing to address nitrates in drinking water?

- When nitrate is found to be above the MCL in a Public Water System, CDPH requires the water system to inform the customers, and to take steps to address the violation.
- CDPH is working to identify, track, and correct systems with nitrate MCL violations. CDPH is embarking on small water system program goal specifically to address compliance by the smallest community water systems (< 1,000 service connections)
- CDPH and its contractors are providing technical assistance to small water systems to identify alternatives and secure state or federal funds for improvements or consolidation.
- CDPH permits, inspects and reviews monitoring data from public water systems in order to identify systems that may be approaching the MCL.
- For those systems that have treatment, CDPH provides regulatory oversight to ensure that these systems are functioning in a manner that provides safe drinking water.
- Individuals concerned about levels of nitrate in their drinking water should have samples analyzed by a certified lab.
- CDPH has posted a list on its website of certified labs that can analyze the samples for nitrate in drinking water.

Questions?

- Please refer to the CDPH website for additional information

<http://www.cdph.ca.gov/certlic/drinkingwater/Pages/Nitrate.aspx>